Analytical Chemistry

COMPOSITIONAL ANALYSIS OF HOUSE PAINTS USED BY PICASSO, M. Chastain[1], F. Casadio*[2], G. Gautier[2], Northwestern University[1], Department of Materials Science and Engineering, Evanston, IL 60201, The Art Institute of Chicago[2], Department of Conservation Science, Chicago, IL 60603, fcasadio@artic.edu

Picasso's artwork often contains non-artist's paints as well as traditional artists' oils. In order to scientifically identify paint types for historical and conservation purposes, it is necessary to understand the compositions of both artists' and non-artists' materials. The purpose of this research was to build a database of compositions found in pre-1950 formulations of Ripolin, a brand of house paint used extensively by Picasso. Samples of Ripolin were analyzed using a combination of X-ray fluorescence spectroscopy (XRF) and Fourier transform infrared spectroscopy (FTIR). Inorganic materials were identified through XRF elemental analysis. FTIR verified XRF results and characterized organic compounds. The feasibility of characterizing paints' metal soaps through secondary ion mass spectrometry (SIMS) or the synthesis of reference samples for FTIR analysis was also explored.

A database of XRF and FTIR spectra was assembled, which demonstrated that Ripolin composition changed gradually with time during the early 20th century and that a number of inorganic materials were common to Ripolin paints. Combinations of zinc white, Prussian blue, iron oxide, and lead chromate yellow pigments were present in most colors. Fillers containing barium and strontium were used heavily, as were lead-based and cobalt-based metal soaps used as driers. The presence of these compounds in a work of art, together with visual observations, may indicate that house paints were used. Both SIMS and the synthesis of references showed promise as techniques for use in future studies of metal soaps.

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